DENON AVR/AVC control protocol

Ver. 3.61

Application model : AVR-2803(AVC-2570)
Application terminal : Serial Port

Connector specification

Connector type : 3.5mm Stereo Mini Plug
(Tip: RXD , Middle Band: TXD , Base: GND)
Communication format :

Synchronous system	: Tone step synchronization
Communication system	: A half duplex
Communication speed	: 9600bps
Character length	: 8 bits
Parity control	: None
Start bit	: 1 bit
Stop bit	: 1 bit
Communication procedure	: Non procedural
Communication data length	: 135 bytes (maximum)

Protocol specification

The following three data forms are defined.

COMMAND : The message sent to a system(AVR/AVC) from a controller(Touch Panel etc.)
A command to a system is given from a controller.

EVENT : The message sent to a controller (Touch Panel etc.) from a system (AVR/AVC)
The result is sent, when a system is operated directly and a state changes.
*The form of ***EVENT*** presupposes that it is the same as that of ***COMMAND***.
Refer to the following table for the contents of ***COMMAND* and ***EVENT***.

RESPONSE : The message sent to a controller (Touch Panel etc.) from a system (AVR/AVC)
If the 'request command' (***COMMAND***+***?***+CR (0x0D)) has came from a controller.
The ***RESPONSE*** should be sent within 200ms of receiving the ***COMMAND***.
*The form of ***RESPONSE*** presupposes that it is the same as that of ***EVENT***.

Basic specification : The command by ASCII CODE, parameter expression
*ASCII CODE which can be used is from 0x20 to 0x7F : the alphabet and the number of 0-9 , and space (0x20) , some signs , AND carriage return (0x0D)--- It is used only as a pause sign.

Command structure : COMMAND + PARAMETER + CR (0x0D)
COMMAND : ASCII CODE of 2 characters
ex. SI : Select Input source
MS : surround Mode Setting
MV : Master Volume setting
PW : system PoWer setting
PARAMETER : ASCII CODE (up to 25 characters)
ex. DVD : function name
CDR/TAPE-1 : function name
THX SURROUND EX : surround mode name
SUPER STADIUM : surround mode name
*Special Parameter--- ? : for request command

The example of a command * <CR> is the meaning of 0x0D.

SIDVD<CR> : Select Input source DVD

MSTHX SURROUND EX<CR> : surround Mode Set to THX SURROUND EX

MVUP<CR> : Master Volume UP

PWON<CR> : system PoWer ON

PWSTANDBY<CR> : system PoWer STANDBY

SI?<CR> : Request command for now playing input source >> Return ***RESPONSE*** 'SI***<CR>'

Others

A) ***COMMAND*** is receivable also during transmission of ***EVENT***.

B) Since CHANNEL VOLUME changes simultaneously when the SURROUND MODE changes, the value of the channel volume of all channels returns as ***EVENT***.

C) CHANNEL VOLUME returns the data of ALL channels by the present SURROUND MODE also including an intact channel. In this case, the data of an intact channel is set to "50".

D) Since SURROUND MODE changes simultaneously when the INPUT source changes, the SURROUND MODE (and also the value of the channel volume of all channels , It described in B)) returns as ***EVENT***.

E) When SURROUND MODE is the same in between INPUT source change before and after, ***EVENT*** of SURROUND MODE and CHANNEL VOLUME does NOT return.

F) Although ***EVENT*** of SURROUND MODE returns when the present SURROUND MODE is set up again, CHANNEL VOLUME does NOT return.

G) When SURROUND MODE is changed, before returning SURROUND MODE after change as ***EVENT***, the present SURROUND MODE is returned.

H) The ***RESPONSE*** should be sent as opposed to the request command by all the commands with which an ***EVENT*** exists , not need to the another request commands(ex. SV command).

I) The ***PARAMETER*** (with ***COMMAND*** and ***RESPONSE***, ***EVENT***) of minimum level of MASTER VOLUME and MULTI ZONE VOLUME defines "99". (because "00" defines as -80dB.)

J) If the MASTER VOLUME & CHANNEL VOLUME set with 0.5dB step, the ***PARAMETER*** (with ***COMMAND*** and ***RESPONSE***, ***EVENT***) defines three ASCII characters as bellows.

ex. MASTER VOLUME = +1.0dB : MV81<CR>
+0.5dB : MV805<CR>
0dB : MV80<CR>
-0.5dB : MV795<CR>
-1.0dB : MV79<CR>
| |
-79.5dB : MV005<CR>
-80.0dB : MV00<CR>
--- : MV99<CR>

* At the **.0dB step, only uses two ASCII characters as ***PARAMETER***, same as usual.

COMMAND and PARAMETER list

COMMAND	***PARAMETER***	function	example	
PW	ON	POWER ON/STANDBY change	PWON<CR>	
	STANDBY		PWSTANDBY<CR>	
MV	UP	MASTER VOLUME UP/DOWN , direct change to ***dB	MVUP<CR>	
	DOWN		MVDOWN<CR>	
	**	**:00 to 99 by ASCII , 80=0dB	MV80<CR>	*
CV	FL UP	CHANNEL VOLUME UP/DOWN , direct change to ***dB	CVFL UP<CR>	
	FL DOWN	---FRONT Lch	CVFL DOWN<CR>	
	FL **	**:38 to 62 by ASCII , 50=0dB	CVFL 50<CR>	*
	FR UP		CVFR UP<CR>	
	FR DOWN	---FRONT Rch	CVFR DOWN<CR>	
	FR **	**:38 to 62 by ASCII , 50=0dB	CVFR 50<CR>	*
	C UP		CVC UP<CR>	
	C DOWN	---CENTERch	CVC DOWN<CR>	
	C **	**:38 to 62 by ASCII , 50=0dB	CVC 50<CR>	*
	SW UP		CVSW UP<CR>	
	SW DOWN	---SUBWOOFERch	CVSW DOWN<CR>	
	SW **	**:38 to 62 by ASCII , 50=0dB	CVSW 50<CR>	*
	SL UP		CVSL UP<CR>	
	SL DOWN	---SURROUND Lch	CVSL DOWN<CR>	
	SL **	**:38 to 62 by ASCII , 50=0dB	CVSL 50<CR>	*
	SR UP		CVSR UP<CR>	
	SR DOWN	---SURROUND Rch	CVSR DOWN<CR>	
	SR **	**:38 to 62 by ASCII , 50=0dB	CVSR 50<CR>	*
	SBL UP	---SURROUND BACK Lch (SBch 2SP)	CVSBL UP<CR>	
	SBL DOWN		CVSBL DOWN<CR>	
	SBL **	**:38 to 62 by ASCII , 50=0dB	CVSBL 50<CR>	*
	SBR UP	---SURROUND BACK Rch (SBch 2SP)	CVSBR UP<CR>	
	SBR DOWN		CVSBR DOWN<CR>	
	SBR **	**:38 to 62 by ASCII , 50=0dB	CVSBR 50<CR>	*

MV , CV ***COMMAND*** : "*" parameter uses two or three ASCII characters. (see page4 J) section)

COMMAND	***PARAMETER***	function	example
CV	SB UP	---SURROUND BACKch (SBch 1SP)	CVSB UP<CR>
	SB DOWN		CVSB DOWN<CR>
	SB **	**:38 to 62 by ASCII , 50=0dB	CVSB 50<CR> *
MU	ON	OUTPUT MUTE ON/OFF change	MUON<CR>
	OFF		MUOFF<CR>
SI	PHONO	Select INPUT source	SIPHONO<CR>
	CD		SICD<CR>
	TUNER		SITUNER<CR>
	DVD		SIDVD<CR>
	VDP		SIVDP<CR>
	TV		SITV<CR>
	DBS/SAT	---Select DBS function at AVR-2803	SIDBS/SAT<CR>
	VCR-1		SIVCR-1<CR>
	VCR-2		SIVCR-2<CR>
	VCR-3	---Invalid at AVR-2803	SIVCR-3<CR>
	V.AUX		SIV.AUX<CR>
	CDR/TAPE1	---Select CDR/TAPE function at AVR-2803	SICDR/TAPE1<CR>
	MD/TAPE2	---Invalid at AVR-2803	SIMD/TAPE2<CR>
ZM	ON	MAIN-ZONE ON/OFF change	ZMON<CR>
	OFF		ZMOFF<CR>
Z1	PHONO	MULTI ZONE-1 mode set , and select source	Z1PHONO<CR>
	|	---The name of PARAMETER is	|
	CDR/TAPE1	the same as that of the time of SI COMMAND.	Z1CDR/TAPE1<CR>
	SOURCE	MULTI ZONE-1 mode cancel	Z1SOURCE<CR>
	UP	MULTI ZONE-1 VOLUME UP/DOWN , direct change to ***dB	Z1UP<CR>
	DOWN		Z1DOWN<CR>
	**	**:00 to 99 by ASCII , 80=0dB	Z180<CR> *
	ON	MULTI ZONE-1 ON/OFF change	Z1ON<CR>
	OFF		Z1OFF<CR>
		---Set ZONE-2 functions at AVR-2803	

CV , Z1 ***COMMAND*** : "*" parameter uses two or three ASCII characters. (see page4 J) section)

COMMAND	***PARAMETER***	function	example
Z2	PHONO | MD/TAPE2	MULTI ZONE-2 mode set , and select source ---The name of PARAMETER is the same as that of the time of SI COMMAND.	Z2PHONO<CR> | Z2MD/TAPE2<CR>
	SOURCE	MULTI ZONE-2 mode cancel	Z2SOURCE<CR>
	UP	MULTI ZONE-2 VOLUME UP/DOWN , direct change to ***dB	Z2UP<CR>
	DOWN		Z2DOWN<CR>
	**	**:00 to 99 by ASCII , 80=0dB	Z280<CR> *
	ON	MULTI ZONE-2 ON/OFF change	Z2ON<CR>
	OFF		Z2OFF<CR>
		---Invalid at AVR-2803	
SR	PHONO | CDR/TAPE1	REC SELECT mode set , and select source ---The name of PARAMETER is the same as that of the time of SI COMMAND.	SRPHONO<CR> | SRCDR/TAPE1<CR>
	SOURCE	REC SELECT mode cancel	SRSOURCE<CR>
SV	DVD	VIDEO SELECT mode set , and select source	SVDVD<CR>
	VDP		SVVDP<CR>
	TV		SVTV<CR>
	DBS/SAT		SVDBS/SAT<CR>
	VCR-1		SVVCR-1<CR>
	VCR-2		SVVCR-2<CR>
	VCR-3	---Invalid at AVR-2803	SVVCR-3<CR>
	V.AUX		SVV.AUX<CR>
	SOURCE	VIDEO SELECT mode cancel	SVSOURCE<CR>
SD	AUTO	set DIGITAL INPUT AUTO mode	SDAUTO<CR>
	PCM	set DIGITAL INPUT force PCM mode	SDPCM<CR>
	DTS	set DIGITAL INPUT force DTS mode	SDDTS<CR>
	RF	---Invalid at AVR-2803	SDRF<CR>
	ANALOG	set force ANALOG INPUT mode	SDANALOG<CR>
	EXT.IN-1	set EXT.IN-1 mode ---Set EXT.IN mode at AVR-2803	SDEXT.IN-1<CR>
	EXT.IN-2	set EXT.IN-2 mode ---Invalid at AVR-2803	SDEXT.IN-2<CR>

Z2 ***COMMAND*** : "*" parameter uses two or three ASCII characters. (see page4 J) section)

EVENT	***PARAMETER***	function	example
MS	DIRECT	SURROUND mode set	MSDIRECT<CR>
	PURE DIRECT	---Invalid at AVR-2803	MSPURE DIRECT<CR>
	STEREO		MSSTEREO<CR>
	MULTI CH IN	---Invalid at AVR-2803	MSMULTI CH IN<CR>
	MULTI CH DIRECT	---Invalid at AVR-2803	MSMULTI CH DIRECT<CR>
	MULTI CH PURE D	---Invalid at AVR-2803	MSMULTI CH PURE D<CR>
	DOLBY PRO LOGIC	All are received as "DOLBY SURROUND" ,	MSDOLBY PRO LOGIC<CR>
	DOLBY PL2	the surround mode which changed return as ***EVENT***.	MSDOLBY PL2<CR>
	DOLBY DIGITAL		MSDOLBY DIGITAL<CR>
	DOLBY D EX		MSDOLBY D EX<CR>
	DTS NEO:6	All are received as "DTS SURROUND" ,	MSDTS NEO:6<CR>
	DTS SURROUND	the surround mode which changed return as ***EVENT***.	MSDTS SURROUND<CR>
	DTS ES DSCRT6.1		MSDTS ES DSCRT6.1<CR>
	DTS ES MTRX6.1		MSDTS ES MTRX6.1<CR>
	HOME THX CINEMA	---Invalid at AVR-2803	MSHOME THX CINEMA<CR>
	THX5.1	---Invalid at AVR-2803	MSTHX5.1<CR>
	THX U2 CINEMA	---Invalid at AVR-2803	MSTHX U2 CINEMA<CR>
	THX MUSIC MODE	---Invalid at AVR-2803	MSTHX MUSIC MODE<CR>
	THX6.1	---Invalid at AVR-2803	MSTHX6.1<CR>
	THX SURROUND EX	---Invalid at AVR-2803	MSTHX SURROUND EX<CR>
	WIDE SCREEN	---Invalid at AVR-2803	MSWIDE SCREEN<CR>
	5CH STEREO	Both are received as "5CH/7CH STEREO" ,	MS5CH STEREO<CR>
	7CH STEREO	the surround mode which changed return as ***EVENT***.	MS7CH STEREO<CR>
	SUPER STADIUM	---Invalid at AVR-2803	MSSUPER STADIUM<CR>
	ROCK ARENA		MSROCK ARENA<CR>
	JAZZ CLUB		MSJAZZ CLUB<CR>
	CLASSIC CONCERT	---Invalid at AVR-2803	MSCLASSIC CONCERT<CR>
	MONO MOVIE		MSMONO MOVIE<CR>
	VIDEO GAME		MSVIDEO GAME<CR>
	MATRIX		MSMATRIX<CR>
	VIRTUAL		MSVIRTUAL<CR>

EVENT	***PARAMETER***	function	example
PS	TONE DEFEAT ON	PARAMETER setting	PSTONE DEFEAT ON<CR>
	TONE DEFEAT OFF	TONE DEFEAT ON/OFF	PSTONE DEFEAT OFF<CR>
	SB:MTRX ON	SURROUND BACK SP MODE set	PSSB:MTRX ON<CR>
	SB:NON MTRX	---MTRX ON = SURR.EX ON = DSCRT ON	PSSB:NON MTRX<CR>
	SB:OFF	(at THX mode) (at ES DSCRT mode)	PSSB:OFF<CR>
	CINEMA EQ.ON	CINEMA EQ. ON/OFF	PSCINEMA EQ.ON<CR>
	CINEMA EQ.OFF		PSCINEMA EQ.OFF<CR>
	MODE : MUSIC	CINEMA / MUSIC /PL mode change	PSMODE : MUSIC<CR>
	MODE : CINEMA	(This parameter can change DOLBY PL2,NEO:6 mode.)	PSMODE : CINEMA<CR>
	MODE : EMULATION	--- "EML" can change ONLY DOLBY PL2 mode.	PSMODE : EMULATION<CR>
TF	UP	TUNER Frequency UP/DOWN , direct change	TFUP<CR> *
	DOWN		TFDOWN<CR> *
	****** (6 digits)	--- ****.** kHz at AM band (>050000 is AM.)	TF105000<CR>
		****.** MHz at FM band (<050000 is FM.)	(1050.00kHz at AM)
TP	UP	TUNER PRESET CH UP/DOWN , direct change to No.**	TPUP<CR>
	DOWN		TPDOWN<CR>
	**(PRESET No.)		TPA1<CR>
			(PRESET No."A1")
TM		TUNER BAND , MODE Select	
	AM	---Band set to AM	TMAM<CR>
	FM	---Band set to FM	TMFM<CR>
	AUTO	---Tuning mode set to AUTO mode	TMAUTO<CR> *
	MANUAL	---Tuning mode set to MANUAL mode	TMMANUAL<CR> *

TF, TP, TM ***COMMAND*** : '*' parameters can NOT operate when INPUT source isn't TUNER.

EVENT(or RESPONSE) and PARAMETER list

EVENT	***PARAMETER***	function	example *RES.
PW	ON	POWER ON/STANDBY change	PWON<CR>
	STANDBY		PWSTANDBY<CR>
MV	**	MASTER VOLUME change , **:00 to 99 by ASCII 98 = +18dB(MAX) 80 = 0dB 00 = -80dB 99 = --- (MIN)	MV80<CR> MV795<CR>
CV	FL **	CHANNEL VOLUME change , **:38 to 62 by ASCII 62 = +12dB(MAX) 50 = 0dB 38 = -12dB(MIN) 00 = OFF (define ONLY SWch)	CVFL 50<CR>
	FR **		CVFR 50<CR>
	C **		CVC 50<CR>
	SW **		CVSW 50<CR>
	SL **		CVSL 50<CR>
	SR **		CVSR 50<CR>
	SBL **	(at SBch 2SP)	CVSBL 50<CR>
	SBR **	(at SBch 2SP)	CVSBR 50<CR>
	SB **	(at SBch 1SP)	CVSB 50<CR>
MU	ON	OUTPUT MUTE ON/OFF change	MUON<CR>
	OFF		MUOFF<CR>
SI	PHONO	INPUT source change	SIPHONO<CR>
	CD		SICD<CR>
	TUNER		SITUNER<CR>
	DVD		SIDVD<CR>
	VDP		SIVDP<CR>
	TV		SITV<CR>
	DBS/SAT	---Select DBS function at AVR-2803	SIDBS/SAT<CR>
	VCR-1		SIVCR-1<CR>
	VCR-2		SIVCR-2<CR>
	VCR-3	---Invalid at AVR-2803	SIVCR-3<CR>
	V.AUX		SIV.AUX<CR>
	CDR/TAPE1	---Select CDR/TAPE function at AVR-2803	SICDR/TAPE1<CR>
	MD/TAPE2	---Invalid at AVR-2803	SIMD/TAPE2<CR>

The ***PARAMETER*** of MV, CV ***EVENT*** : Uses two or three ASCII characters. (see page4 J) section)

RES. : NOT returns '' parameters as ***RESPONSE***.

EVENT	***PARAMETER***	function	example *RES.
ZM	ON	MAIN-ZONE ON/OFF change	ZMON<CR>
	OFF		ZMOFF<CR>
Z1	PHONO | CDR/TAPE1	MULTI ZONE-1 source change ---The name of PARAMETER is the same as that of the time of SI COMMAND.	Z1PHONO<CR> | Z1CDR/TAPE1<CR>
	SOURCE	MULTI ZONE-1 mode cancel	Z1SOURCE<CR>
	**	MULTI ZONE-1 VOLUME change , **:00 to 99 by ASCII 98 = +18dB(MAX) 80 = 0dB 10 = -70dB 99 = ---(MIN)	Z180<CR>
	ON	MULTI ZONE-1 ON/OFF change	Z1ON<CR>
	OFF		Z1OFF<CR>
		---means MULTI ZONE functions at AVR-2803	
Z2	PHONO | CDR/TAPE1	MULTI ZONE-2 source change ---The name of PARAMETER is the same as that of the time of SI COMMAND.	Z2PHONO<CR> | Z2CDR/TAPE1<CR>
	SOURCE	MULTI ZONE-2 mode cancel	Z2SOURCE<CR>
	**	MULTI ZONE-2 VOLUME change , **:00 to 99 by ASCII 98 = +18dB(MAX) 80 = 0dB 10 = -70dB 99 = ---(MIN)	Z280<CR>
	ON	MULTI ZONE-2 ON/OFF change	Z2ON<CR>
	OFF		Z2OFF<CR>
		---Invalid at AVR-2803	
SR	PHONO | CDR/TAPE1	REC SELECT source change ---The name of PARAMETER is the same as that of the time of SI COMMAND.	SRPHONO<CR> | SRCDR/TAPE1<CR>
	SOURCE	REC SELECT mode cancel	SRSOURCE<CR>

The ***PARAMETER*** of Z1, Z2 ***EVENT*** : Uses two or three ASCII characters. (see page4 J) section)

EVENT	***PARAMETER***	function	example *RES.
TF	****** (6 digits)	TUNER Frequency change --- ****.** kHz at AM band ****.** MHz at FM band	TF105000<CR> (1050.00kHz at AM)
TP	**(PRESET No.)	TUNER PRESET change to No.**	TPA1<CR> (PRESET No.”A1”)
TM		TUNER BAND , MODE change	
	AM	---Band set to AM	TMAM<CR>
	FM	---Band set to FM	TMFM<CR>
	AUTO	---Tuning mode set to AUTO mode	TMAUTO<CR>
	MANUAL	---Tuning mode set to MANUAL mode	TMMANUAL<CR>

EVENT	***PARAMETER***	function	example *RES.
MS	DIRECT	SURROUND mode change	MSDIRECT<CR>
	PURE DIRECT	---Invalid at AVR-2803	MSPURE DIRECT<CR>
	STEREO		MSSTEREO<CR>
	MULTI CH IN	---Invalid at AVR-2803	MSMULTI CH IN<CR>
	MULTI CH DIRECT	---Invalid at AVR-2803	MSMULTI CH DIRECT<CR>
	MULTI CH PURE D	---Invalid at AVR-2803	MSMULTI CH PURE D<CR>
	DOLBY PRO LOGIC		MSDOLBY PRO LOGIC<CR>
	DOLBY PL2		MSDOLBY PL2<CR>
	DOLBY DIGITAL		MSDOLBY DIGITAL<CR>
	DOLBY D EX		MSDOLBY D EX<CR>
	DTS NEO:6		MSDTS NEO:6<CR>
	DTS SURROUND		MSDTS SURROUND<CR>
	DTS ES DSCRT6.1		MSDTS ES DSCRT6.1<CR>
	DTS ES MTRX6.1		MSDTS ES MTRX6.1<CR>
	HOME THX CINEMA	---Invalid at AVR-2803	MSHOME THX CINEMA<CR>
	THX5.1	---Invalid at AVR-2803	MSTHX5.1<CR>
	THX U2 CINEMA	---Invalid at AVR-2803	MSTHX U2 CINEMA<CR>
	THX MUSIC MODE	---Invalid at AVR-2803	MSTHX MUSIC MODE<CR>
	THX6.1	---Invalid at AVR-2803	MSTHX6.1<CR>
	THX SURROUND EX	---Invalid at AVR-2803	MSTHX SURROUND EX<CR>
	WIDE SCREEN	---Invalid at AVR-2803	MSWIDE SCREEN<CR>
	5CH STEREO		MS5CH STEREO<CR>
	7CH STEREO		MS7CH STEREO<CR>
	SUPER STADIUM	---Invalid at AVR-2803	MSSUPER STADIUM<CR>
	ROCK ARENA		MSROCK ARENA<CR>
	JAZZ CLUB		MSJAZZ CLUB<CR>
	CLASSIC CONCERT	---Invalid at AVR-2803	MSCLASSIC CONCERT<CR>
	MONO MOVIE		MSMONO MOVIE<CR>
	MATRIX		MSMATRIX<CR>
	VIRTUAL		MSVIRTUAL<CR>